

CLAIMS

Claim 1. A heat sink for a heat generating device, comprising:

an enclosed metal chamber in contact with said heat generating device;

a two-phase vaporizable coolant recycled in said chamber to remove heat from said heat generating device;

a flow path comprising an upper section and a lower section, said upper section and said lower section being separated by an isolation plate and connected by a conveying conduit at ends for said coolant to flow from said upper section to said lower section, said upper section being in contact with the inner top wall of said chamber for vapor condensation and heat dissipation;

said lower section functioning as part of a recycling passage for the condensed coolant; and

a wick evaporator in contact with said lower section to draw said condensed coolant from said lower section by capillary attraction force, and said coolant collected within said evaporator waiting to be vaporized by the heat from said heat generating device.

Claim 2. The heat sink as described in claim 1, wherein electronic device is an integrated circuit (IC) chip.

Claim 3. The heat sink as described in claim 2, wherein said IC chip is a central processing unit (CPU).

Claim 4. The heat sink as described in claim 1, wherein said capillary element is a wick selected from the group consisting of sintered copper powder, sintered nickel powder and stainless-steel powder.

Claim 5. The heat sink as described in claim 1, wherein said capillary element is selected from the group consisting of metal mesh and metal cloth.

Claim 6. The heat sink as described in claim 1, wherein at least one of said upper section and said lower section is selected from the group consisting of space and parallel grooves.

Claim 7. The heat sink as described in claim 6, wherein said grooves have a cross-section selected from the group consisting of : V-shaped, triangular, rectangular and trapezoidal.

Claim 8. The heat sink as described in claim 1, further comprising a guiding plane mounted on top of said capillary element to allow part of coolant condensed on the inner top surface of said chamber to flow downward back to the capillary element.

Claim 9. The heat sink as described in claim 1, wherein said upper section and said conveying conduit are integrated with the top of said chamber as a unitary cover.

Claim 10. The heat sink as described in claim 1, wherein said lower section and said conveying conduit are integrated with the bottom of said chamber as a unitary base.

Claim 11. The heat sink as described in claim 1, wherein said capillary element is an array of pins spaced apart to allow the space between the pins to capillarily absorb the coolant.

Claim 12. The heat sink as described in claim 8, wherein said guiding plate is of meshed metal.

Claim 13. The heat sink as described in claim 1, wherein said enclosed chamber is rotated from a horizontal position to a vertical position.

Claim 14. The heat sink as described in claim 1, wherein said electronic device is mounted on a circuit board.

Claim 15. The heat sink as described in claim 1, further comprising a second capillary element placed in said conveying conduit.